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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 August 2007*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-43,45,46 and 48-73* is/are pending in the application.

   4a) Of the above claim(s) *42* is/are withdrawn from consideration.

5)☒ Claim(s) *40* is/are allowed.

6)☒ Claim(s) *1-39,41,43,45,46 and 48-73* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some *   c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1.   Pursuant to Applicant's arguments in the interview on 01/15/2008, the Examiner

concedes that the rejection mailed on 11/01/2007 does not address all the amended

limitations as presented in the amendment filed 08/20/2007. The rejection in the previous

office action is vacated.

Claims 1-43, 45, 46, and 48-73 are currently pending in this application.

Applicant is required to cancel non-elected claim 42 in the next response to this Office

Action.

Applicant should update the related Application information.

Cross-referenced Application information must accurately reflect the relevant status of

related cases. Applicant should review the related cases and provide appropriate

amendments to reflect the current information on each case with relevancy to the instant

Application.

Request Continuation for Examination

2.   A request for continued examination under 37 CFR 1.114, including the fee set forth in

37 CFR 1.17(e), was filed in this application after final rejection. Since this application is

eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR

1.17(e) has been timely paid, the finality of the previous Office action has been

withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/02/2007 has

been entered.

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming
> the subject matter which the applicant regards as his invention.

Claims 1-11 and 53-56, 62, and 68 is rejected under 35 U.S.C. 112, second paragraph, as

being indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention.

As to claim 1, *"said object-oriented virtual machine interface"* lacks antecedent basis.

Dependent claims 2-11 and 53-56, 62, and 68 are rejected for fully incorporating the

deficiencies of their base claim.

Claim 56-67 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for

failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention.

Regarding claims 56-67, the phrase *"may be"* renders the claim indefinite because it is

unclear whether the limitation(s) following the phrase are part of the claimed invention.

See MPEP § 2173.05(d). The resulting claim does not clearly set forth the metes and

bounds of the patent protection desired. The use of similar exemplary language "for

example" or "such as" was found to be indefinite in the following cases: Ex parte Hall,

83 USPQ 38 (Bd. App. 1949); Ex parte Hasche, 86 USPQ 481 (Bd. App. 1949); Ex parte

Steigerwald, 131 USPQ 74 (Bd. APP. 1961).

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and
using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or
with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the
inventor of carrying out his invention.

Claims 1-11, 13-22, 25-39, 41, 43, 45, 46, and 48-73 are rejected under 35 U.S.C. 112,

first paragraph, as containing subject matter which was not described in the specification

in such a way as to reasonably convey to one skilled in the relevant art that the

inventor(s), at the time the application was filed, had possession of the claimed invention.

Specification does not explicitly describe nor is sufficiently clear for one of ordinary skill

in art to recognize the feature "***each kernel … is capable of running simultaneously

with any of the plurality of kernels***" in claims 1, 13, 29, 37, 46, and 46 as amended by

Applicant in the amendment filed 08/02/2007.

The Examiner could not locate the details of the feature "***each kernel … is capable of

running simultaneously with any of the plurality of kernels***" in the specification.

The dependent claims are rejected for fully incorporating the deficiencies of their base

claims.

Claim Rejections - 35 USC § 101

4.   35 U.S.C. 101 reads as follows:
Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
matter, or any new and useful improvement thereof, may obtain a patent flaerefor, subject to the conditions
and requirements of this title.

Claims 1-28, 51-57, 62, 63, 68, and 69 are rejected under 35 U.S.C. 101 because the

claimed invention is directed to non-statutory subject matter.

Independent claims 1 and 12 recite a virtual machine interface/an object-oriented virtual

machine interface, which is merely a software component, i.e., computer program per se.

Such claimed matter, which is non-functional descriptive material per se, is not statutory.

Such claimed computer program does not define any structural and functional interrelationships between the computer program and other claimed aspects of the invention which permit the computer's program's functionality to be realized. Since a computer program is merely a set of instructions capable of being executed by a computer, the program itself is not a process, without the computer-readable medium needed to realize the computer's functionality, it is regarded as nonstatutory functional descriptive material. Therefore, the claimed invention is directed to non-statutory subject mater.

Independent claims 13, 23, and 24 recite a configurable system/ an object-oriented configurable system, which is merely a software component, i.e., computer program per se. Such claimed matter, which is non-functional descriptive material per se, is not statutory. Such claimed computer program does not define any structural and functional interrelationships between the computer program and other claimed aspects of the invention which permit the computer's program's functionality to be realized. Since a computer program is merely a set of instructions capable of being executed by a computer, the program itself is not a process, without the computer-readable medium needed to realize the computer's functionality, it is regarded as nonstatutory functional descriptive material. Therefore, the claimed invention is directed to non-statutory subject mater.

The dependent claims are rejected for fully incorporating the deficiencies of their base claims.

Claim Rejections - 35 USC § 103

5.   The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 13-15, 19-29, 37, 49-51, 52, 55, 57-59, 63-65, and 69-71 are rejected under 35 U.S.C. § 103(a) as being unpatentable over **Sharrit et al.** (U.S. Patent 5,999,990) in view of **Songer et al.** (U.S. Patent 6,763,327).

As to claim 13:

Sharrit teaches a reconfigurable system comprising virtual machine interface, a virtual machine and a separate reconfigurable apparatus (Figs. 1-7);

the reconfigurable apparatus (communicator 10) coupled to the virtual machine and comprising a plurality of kernels (configurations of reconfigurable resource units RRUs); and the virtual machine interface coupled to the virtual machine and comprising a plurality of software objects (library of configuration files) including a first subset of the software objects (one set / different set of processing functions), each software object in the first subset of the software objects associated with (used to configure RRUs) a

different kernel in the plurality of kernels such that a change to a software object (new /

updated configuration files, col. 4, lines 14-15) in the first subset of the software objects

results in a change in the kernel (RRUs restructure themselves in accordance with the

configuration information) associated with the software object [See col. 1, line 54 - col. 2,

line 58. It is noted that a set of RRUs with its respective configuration form a kernel

which typically is a collection of system management functions].

Sharrit does not explicitly disclose the kernels are designed for specific functions and are

capable of running simultaneously with any of the plurality of kernels.

Songer teaches the kernels are designed for specific functions and are capable of running

simultaneously with any of the plurality of kernels "kernel objects…corresponding to

various combinations of these configuration options", col. 7 lines 4-7 in order to facilitate

the interface mechanism, which corresponds to the limitation of each kernel is designed

to perform a specific processing function and are capable of running simultaneously with

any of the plurality of kernels (col.18, lines 33-67).

It would have been obvious to a person of ordinary skill in the art at the time the

invention was made to modify Sharrit with Songer because would have provided the

requisite management over kernel objects in the VM interface for recongigurable

systems.

As to claim 14:

Sharrit teaches the plurality of software objects includes a second subset (library of

configuration files) of the software objects, each software object in the second subset of

the software objects having at Least one adjustable attribute (new / updated configuration

files, one set / different set of processing functions) [Col. 1, line 54 - col. 2, line 58].

As to claim 15:

Sharrit teaches at Least one adjustable 'attribute is a static or dynamic attribute

(dynamically altered processing) [Col. 1, lines 56-59].

As to claims 18 and 21:

Sharrit teaches resource allocator (resource allocation unit) configured to receive the

machine-readable instructions and issue a signal/command to configure a kernel in the

plurality of kernels [Col. 7, lines 14-67].

As to claim 19:

Sharrit teaches program for utilizing a plurality of software objects (Col. 5, lines 2-57].

As to claim 20:

Sharrit teaches compiling functionality (linkage functionality, col. 5, lines 56-57).

Therefore, it would have been obvious to use a compiler to provide such functionality.

Further, JIT compiler for JVM was well known at the time when the present application

was filed. Translating is a default function of a typical compiler.

As to claims 22 and 55:

Sharrit teaches a software object in said plurality of software objects is a searcher object,

a code generation unit object (Linkage functionality, col. 5, lines 56-57), a finger object,

an uplink object **or** a downlink object. Uplink and downlink are typical functions of

wireless communication. It is noted that Sharrit teaches configuring the communicator to

implement various functions of wireless communication. Therefore, it would have been

obvious to implement uplink and downlink functions, with corresponding software

objects, in Sharrit.   It is also noted that the alternatives linked by "or" is interpreted as

requiring only one alternative.

As to claims 25-28, CDMA and its variations: IS-95 CDMA, IS-95B CDMA, CDMA

TIA IS2000, TIA IS 2000A, WCDMA, cdma2000, and ARIB WCDMA, and TDMA and

its variations such as IS-136 TDMA are well known wireless communication protocols. It

would have been obvious to support these protocols/configurations in the communicator

of Sharrit.

As to claims 51-52:

Sharrit teaches one software object objects is associated with at least two kernels and at

least two kernels are associated with one software object in that one application can

output to more than one devices and more than one application can access the same

device [See col. 1, line 54 - col. 2, line 58 and col.4, lines 18-47].

As to claim 57:

Sharrit teaches "dynamically reconfigured RRUs", col. 10 lines 46-50 that correspond to the recitation of the kernels may be configured for different parameters dynamically.

As to claim 63:

Sharrit teaches the objects may be updated according to the states of their associated kernels dynamically (new / updated configuration files -used to configure RRUs, col. 4 lines 14-57).

As to claim 69:

Sharrit teaches a change in a kernel of the plurality of kernels results in a change in the software object associated with that kernel (RRUs restructure themselves in accordance with the configuration information, col. 1, line 54 - col. 2, line 58).

As to claim 29:

The rejection of claim 13 is incorporated herein in full. Additionally, Sharrit further teaches reconfigurable multi-protocol communication (support new and modified signal formats, support wireline and wireless communications, col. 8, lines 45-51; col. 10, lines 46-50), interconnect structure and attribute value (see Figs. 6-7 and associated text).

As to claims 49-50:

Refer to claims 51 and 52 above for rejections.

As to claims 58, 64, and 70:

Refer to claims 57, 63, and 69 above, respectively, for rejections.

As to claim 37:

It is basically a program product claim of claim 29, thus note claim 29 for rejection. Note

the equivalence of instantiating/creating.

As to claims 59, 65, and 71:

Refer to claims 57, 63, and 69 above, respectively, for rejections.

Claims 1-11, 16-18, 30-36, 38, 39, 41, 43, 45, 46, 48, 56, 60-62, 66-68, 72 and 73 are

rejected under 35 U.S.C. § 103(a) as being unpatentable over **Sharrit et al.** (U.S. Patent

5,999,990) in view of **Savitzky et al.** (U.S. Patent 5,732,261) and further in view of

Songer et al. (U.S. Patent 6,763,327).

As to claim 1:

Sharrit teaches a virtual machine interface for a separate reconfigurable wireless network

communication apparatus (Figs. 1-7);

a reconfigurable wireless network communication apparatus (communicator 10)

comprising a plurality of kernels (configurations of reconfigurable resource units RRUs),

a plurality of software objects (library of configuration files) including a first subset of

the software objects (one set / different set of processing functions), each software object

in the first subset of the software objects associated with (used to configure RRUs) a

different kernel in the plurality of kernels so that a change to a software object (new /

updated configuration files, col. 4, lines 14-15) in the first subset of the software objects

results in a change in the kernel (RRUs restructure themselves in accordance with the

configuration information) associated with the software object [See col. 1, line 54 - col. 2,

line 58. It is noted that a set of RRUs with its respective configuration form a kernel

which typically is a collection of system management functions].

While Sharrit provides a virtual machine interface (dynamically reconfigured RRUs) for

the reconfigurable wireless (col. 10, lines 46-50) network communication apparatus

(communicator), Sharrit does not teach that the plurality of software objects are packaged

into an object-oriented virtual machine interface.

Savitzky teaches packaging the plurality of software objects (components / objects, col.

3, lines 60-63) into an object-oriented virtual machine interface (REST object-oriented

application framework, col. 3, lines 33-55) for a reconfigurable (capable of

communicating with almost any remote machine) network communication apparatus.

Col. 5, lines 24-67.

It would have been obvious to package the plurality of software objects into an object-oriented virtual machine interface for the reconfigurable wireless network communication apparatus in Sharrit, as one skilled in the art would have combined the teachings of Sharrit and Savitzky because Sharrit desires incorporating new services to reconfigure resources (col. 5, lines 52-57) and Savitzky provides a mechanism to do so (col. 21, line 65 - col. 22, line 8).

Sharrit as modified by Savitzky does not explicitly disclose the kernels are designed for specific functions and are capable of running simultaneously with any of the plurality of kernels.

Songer teaches the kernels are designed for specific functions and are capable of running simultaneously with any of the plurality of kernels "kernel objects…corresponding to various combinations of these configuration options", col. 7 lines 4-7 in order to facilitate the interface mechanism, which corresponds to the limitation of each kernel is designed to perform a specific processing function and are capable of running simultaneously with any of the plurality of kernels (col.18, lines 33-67).

It would have been obvious to combine Songer's teachings with Sharrit as modified by Savitzky because the abstraction layer of Songer Col. 5 line 65 - col. 6 line 18 would provide the requisite management over kernel objects in the VM interface for recongigurable systems as taught by Sharrit and Savitsky.

As to claims 2 and 3:

Refer to claims 14 and 15 above for rejections.

As to claim 4:

Sharrit teaches a kernel in the plurality of kernels is configurable in accordance with a

communication protocol (transmit/receive signals into/from wireless communication

channel) [Col. 2, lines 6-11].

As to claims 5-8:

Refer to claims 25-28 above for rejections.

As to claim 9:

Refer to claim 22 above for rejection.

As to claim 10:

Sharrit teaches a software object in the plurality of software objects is a matched filter

object or a combiner object (combine RRus/functions, col. 8, lines 17-40). It is noted that

the two alternatives linked by "or" is interpreted as requiring only one.

As to claim 11:

uplink and downlink are typical functions of wireless communication. Sharrit teaches

configuring the communicator to implement various functions of wireless

communication. Therefore, it would have been obvious to implement uplink and

downlink functions, with corresponding software objects, in Sharrit.

As to claim 16:

Sharrit as modified by Savitzky teaches (Savitzky, object-oriented application

framework) an application program interface comprising a plurality of software routines

(API of classes), each software routine in said plurality of software routines representing

a different communication protocol (machine models), wherein said plurality of software

routines comprise software calls to said plurality of software objects (API); and an

application program comprising software calls to said plurality of software routines

(application layer 140). Col. 5, line 23 - col. 6, line 64.

As to claim 17:

Refer to claim 20 above for rejection.

As to claims 56, 62, and 68:

Refer to claims 57, 63, and 68 above, respectively, for rejections.

As to claim 30:

Sharrit as modified by Savitzky teaches a hierarchical relationship (class hierarchies of

the object-oriented framework) [col.6, line 65-col7, line 20].

As to claim 31:

Sharrit as modified by Savitzky teaches (Savitzky) an application Program (application

layer) that includes software calls (APIs) to the plurality of software objects.

As to claims 32 and 34:

The reconfigurable hardware and software of the system of Sharrit as modified by

Savitzky provides a virtual execution environment for each combination of application

and communication protocols, i.e., providing a software virtual machine. Sharrit as

modified by Savitzky teaches issuing an instruction for controlling a kernel in the

plurality of kernels (controller, user).

Such instruction being issued from the software virtual machine/environment would have

been an obvious choice in view of the system architecture of Sharrit as modified by

Savitzky which interfaces a user and the system hardware resources.

As to claim 33:

Refer to claims 17 above for rejection.

As to claims 35 and 36:

Refer to claims 16 above for rejection.

As to claim 38:

Note discussion of claim 16 and the equivalence of the plurality of standards / plurality of

protocols.

As to claim 39:

Note discussion of claim 9 for code generation unit object. Search, finger, uplink and

downlink are typical functions of wireless communication.

Sharrit teaches configuring the communicator to implement various functions of wireless

communication. Therefore, it would have been obvious to implement search, finger,

uplink and downlink functions, with corresponding software objects, in Sharrit as

modified.

As to claim 41:

Refer to claims 25 above for rejection.

As to claim 43:

The rejection of claim 13 is incorporated herein in full. Additionally, Sharrit as modified

by Savitzky further teaches (Savitzky) parsing an application program that designates a

communication protocol (application services, col. 7, line 21 - 50). Producing machine-readable data is a necessary step to realize the control / reconfiguration functions of Sharrit as modified. Further, Sharrit teaches compiling functionality (col. 5, lines 56-57) which typically includes parsing and code generating. Sharrit teaches first software object selected from the plurality of software objects (controller allocate RRU, col. 1, line54 - col. 2, line 5).

As to claim 45:

Sharrit teaches function or procedure (processing functions) [See col. 1, line 54 - col. 2, line 58].

As to claims 60, 66, and 72:

Refer to claims 57, 63, and 69 above, respectively, for rejections.

As to claim 46:

Refer to claims 13 and 43 for rejection.

As to claim 48:

Refer to claim 45 above for rejection.

As to claims 61, 67, and 73:

Refer to claims 57, 63, and 69 above, respectively, for rejections.

Claims 53-54 are rejected under 35 U.S.C. § 103(a) as being unpatentable over **Sharrit,**

Savitzky and **Songer** as applied to claims 1 and 13, respectively, and further in view of

Kwon et al (U. S. Patent 6,151,328).

As to claims 53-54, Kwon teaches that wireless communication functions, including

searcher (searcher 117), finger (finger 119), and matched filter (filters 114-116) [Col. 10,

line 53 -col. 11, line 12].

It would have been obvious to implement searcher, finger, and matched filter objects with

corresponding software objects in Sharrit, as one skilled in the art would have combined

the teachings of Sharrit as modified and Kwon because Sharrit desires adapting to

varying system requirements (col. 1, lines 54-56) and Kwon provides a mechanism to do

so (in consideration of different channel environments, col. 1, lines 55-60).

Indication of Allowable Subject Matter

6.   Claims 40 appears to be allowable over the prior art of record, subject to a final search.

Claims 12, 23, and 24 appear to be allowable over the prior art of record, subject to the

101 rejections above and subject to a final search.

Response to Arguments

7.   Applicant's arguments filed 08/02/2007 have been considered but they are not persuasive.

Regarding independent claims 1, 13, 29, 37, 43, and 46

Applicant's arguments are substantially directed to the amended subject matter. The

amended subject matter is addressed above with respect to the discussion of independent

claims 1, 13, 29, 37, 43, and 46.

Regarding dependent claims

Applicant did not provide arguments in substance regarding the dependent claims except

for citing the dependencies.

Contact Information

8.   Any inquiry or a general nature or relating to the status of this application should
        be directed to the TC 2100 Group receptionist: (571) 272-2100.

        Any inquiry concerning this communication or earlier communications from the
        examiner should be directed to VAN H. NGUYEN whose telephone number is (571)
        272-3765. The examiner can normally be reached on Monday-Thursday from 8:30AM
        6:00PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's
        supervisor, MENG-AI AN can be reached at (571) 272-3756.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/VAN H NGUYEN/
Primary Examiner, Art Unit 2194